What is claimed is:

1. A method of processing audio signals comprising:

processing an input audio signal having one or more feedback components associated with an acoustic feedback path to provide a processed signal;

detecting a feedback component of the one or more feedback components in the input audio signal;

generating a narrowband subaudible probe signal using the processed signal and the detected feedback component;

feeding forward the generated narrowband subaudible probe signal to an output for the processed signal to probe the acoustic feedback path with an acoustic subaudible probe signal; and

adjusting a feedback-inhibiting filter using the narrowband subaudible probe signal to inhibit the feedback component in the input audio signal.

2. The method of claim 1, wherein the method further includes selectively delaying the processed signal to compensate for a delay in generating the narrowband subaudible probe signal to allow for the use of a high amplitude level in the narrowband subaudible probe signal.

3. The method of claim 1, wherein the method further includes forming the narrowband subaudible probe signal by:

filtering the processed signal with a notch filter having a bandwidth to form a filtered signal, the notch filter configured to center its bandwidth on a bandwidth of the detected feedback component; and

sending a subaudible narrowband signal having a first bandwidth into the filtered signal to form the narrowband subaudible probe signal having a second bandwidth to probe the feedback path.

4. The method of claim 3, wherein the method further includes:

comparing the narrowband subaudible probe signal to the input audio signal; and

adjusting the inhibiting filter in response to the comparison to inhibit the feedback component.

5. The method of claim 3, wherein the method further includes selectively turning off the operation of the notch filter when the inhibiting filter is adjusted.

6. The method of claim 3, wherein the method further includes sending the narrowband subaudible probe signal at a level determined using an audibility model.

7. The method of claim 6, wherein sending the narrowband subaudible probe signal at a level determined using an audibility model includes sending the narrowband subaudible probe signal at a level about equal to a criterion level of the audibility model.

8. The method of claim 6, wherein sending the narrowband subaudible probe signal at a level determined using an audibility model includes sending the narrowband subaudible probe signal at a level below a criterion level of the audibility model.

9. The method of claim 1, wherein the method further includes forming the narrowband subaudible probe signal by:

generating an amplitude signal that is indicative of an amplitude level for the probe signal;

generating a frequency signal that is indicative of a frequency for the probe signal; and

generating a sinusoidal signal that is based on the amplitude signal and the frequency signal.

10. The method of claim 9, wherein generating an amplitude signal includes:

filtering the processed signal with a bandpass filter to form a filtered signal;

rectifying the filtered signal to form a rectified signal; and

multiplying the rectified signal with an empirical constant to provide the amplitude signal.

11. The method of claim 9, wherein generating a frequency signal includes:

dividing a feedback indicator parameter by two to provide a first divided signal;

taking the arccosine of the first divided signal to provide an arccosine signal;

multiplying the arccosine signal with a sampling rate to provide a multiplied signal; and

dividing the multiplied signal by 2 times pi to provide the frequency signal.

12. The method of claim 1, wherein adjusting a feedback-inhibiting filter includes:

modeling a response of the acoustic feedback path to provide a sample that is indicative of the response of the feedback path;

transforming selectively the sample by using a discrete-Fourier-transform to obtain a filter coefficient; and

providing one ore more filter coefficients to the feedback-inhibiting filter.

13. The method of claim 12, wherein modeling a response includes:

transforming a feedback indicator parameter and the audio input signal to provide a first complex signal having a first phase and a first amplitude; and

transforming the feedback indicator parameter and an output signal to provide a second complex signal having a second phase and second amplitude.

14. The method of claim 13, wherein modeling further comprises:

determining a difference between the first and the second phase by subtraction to provide a difference signal; and

determining a ratio between the first amplitude and the second amplitude by division to provide a ratio signal.

15. The method of claim 14, wherein modeling further comprises forming the sample from the difference signal and the ratio signal.

16. The method of claim 17, wherein modeling further comprises averaging the sample.

17. A system for enhancing audio signals comprising:

a signal processor for processing an input audio signal to provide a processed signal, the input audio signal having a feedback component, the feedback component associated with an acoustic feedback path;

a detector to detect the feedback component in the input audio signal;

a probe generator to generate a probe signal using the processed signal and a signal provided by the detector in response to the detector detecting the feedback component;

an inhibiting filter to inhibit the feedback component in the input audio signal; and

an output to output a narrowband subaudible probe signal formed from the probe signal fed forward from the probe generator, the narrowband subaudible probe signal used to probe the acoustic feedback path with an acoustic subaudible probe signal.

18. The system of claim 17, wherein the system further includes a switch to selectively provide the output with the processed signal or the narrowband subaudible probe signal.

19. The system of claim 17, wherein the signal processor includes a compressive amplifier.

20. The system of claim 17, wherein the system further includes a combiner to subtract a derived signal from the input audio signal, the derived signal representing a version of the feedback component, the derived signal provided by the inhibiting filter approximating a response of the acoustic feedback path.

21. The system of claim 17, wherein the detector is adapted to determine when the acoustic feedback path will be probed.

22. The system of claim 17, wherein the detector is adapted to determine a range of frequencies at which the acoustic feedback path will be probed.

23. The system of claim 17, wherein the system further includes:

a notch filter to filter the processed signal to provide a filtered signal, the notch filter responsive to a feedback parameter from the detector; and

a combiner to combine the filtered signal and the probe signal to feed forward the narrowband subaudible probe signal to the output.

24. The system of claim 23, wherein the detector is configured to provide a plurality of feedback parameters, and the notch filter is responsive to the plurality of feedback parameters.

25. The system of claim 23, wherein the system further includes a delay coupled to the signal processor to provide the processed signal to the notch filter.

26. The system of claim 23, wherein the notch filter has a bandwidth, the notch filter configured to center its bandwidth on a bandwidth of the detected feedback component.

27. The system of claim 17, wherein the probe generator is configured to generate the probe signal with a bandwidth centered on a bandwidth of the feedback component in the input audio signal.

28. The system of claim 17, wherein the probe generator is configured to generate a plurality of signals that are combined to form a probe signal used to probe the acoustic feedback path.

29. The system of claim 17, wherein the probe generator includes:

an input to receive a feedback indicator parameter from the detector;

an amplitude indicator to indicate an amplitude level of the probe signal, wherein the amplitude indicator provides an amplitude signal;

a frequency indicator to indicate a frequency of the probe signal, wherein the frequency indicator provides a frequency signal; and

a signal generator receptive to the amplitude signal and the frequency signal to generate the probe signal.

30. The system of claim 29, wherein the amplitude indicator includes:

a bandpass filter receptive to the processed signal to provide a filtered signal;

a full-wave rectifier receptive to the filtered signal to provide a rectified signal; and

a multiplier receptive to the rectified signal and an empirical constant to provide the amplitude signal.

31. The system of claim 30, wherein the bandpass filter has a bandpass about 150 Hertz wide.

32. The system of claim 30, wherein the amplitude signal is about 0 to about –3 dB relative to a level of the filtered signal of the bandpass filter.

33. The system of claim 30, wherein the empirical constant ranges from about 0.71 to about 1.0.

34. The system of claim 30, wherein the bandpass filter is configured with a predetermined response to attenuate an amplitude level of the probe signal.

35. The system of claim 29, wherein the frequency indicator includes:

a first divider to divide the feedback indicator parameter by two to provide a first divided signal;

an arccosine function to take the arccosine of the first divided signal to provide an arccosine signal;

a multiplier receptive to the arccosine signal and a system sampling rate to provide a multiplied signal; and

a second divider to divide the multiplied signal by 2 times pi to provide the frequency signal.

36. The system of claim 29, wherein the frequency signal is a constant value.

37. The system of claim 29, wherein the signal generator is a sinusoidal generator.

38. The system of claim 29, wherein the signal generator is a narrowband noise generator.

39. The system of claim 17, wherein the system further includes a filter adjuster responsive to the detector to adjust the inhibiting filter.

40. The system of claim 39, wherein the filter adjuster is configured to compare the input audio signal and an output signal delayed from the output to determine amplitude and phase responses of the acoustic feedback path at a selected probe frequency.

41. The system of claim 39, wherein the filter adjuster is configured to provide the inhibiting filter with a set of filter coefficients from the filter adjuster.

42. The system of claim 39, wherein the filter adjuster is configured to provide the inhibiting filter with a set of discrete-Fourier-transformed filter coefficients.

43. The system of claim 39, wherein the filter adjuster includes a modeler receptive to the narrowband subaudible probe signal from the output, a feedback indicator parameter, and the input audio signal to model a response of the acoustic feedback path when the acoustic feedback path is probed with the acoustic subaudible probe signal at a predetermined frequency.

44. The system of claim 43, wherein the modeler includes:

a first Goertzel transformer receptive to the feedback indicator parameter and the input audio signal to provide a first complex signal having a first phase and a first amplitude; and

a second Goertzel transformer receptive to the feedback indicator parameter and the narrowband subaudible probe signal to provide a second complex signal having a second phase and a second amplitude.

45. The system of claim 44, wherein the modeler further includes:

a combiner to subtract the first phase and the second phase to provide a difference signal; and

a divider to divide the first amplitude and the second amplitude to provide a ratio signal.

46. The system of claim 45, wherein the difference signal and the ratio signal form a sample representing the response of the acoustic feedback path to the acoustic subaudible probe signal.

47. The system of claim 46, wherein the sample is averaged.

48. The system of claim 47, wherein the filter adjuster further includes a discrete-Fourier-transformer to transform the sample to obtain a filter coefficient.

49. The system of claim 17, the processed signal includes an environmental context of a listener.